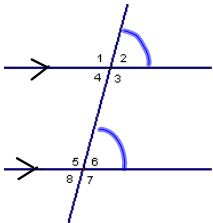


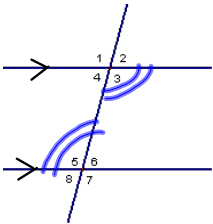
**Postulate 3.1**-If 2 parallel lines are cut by a transversal, then the corresponding angles are congruent.

Abbreviated: If  $\parallel$ , corresponding  $\angle$ s are  $\cong$ .



**Theorem 3.1**-If 2 parallel lines are cut by a transversal, then the alternate interior angles are congruent.

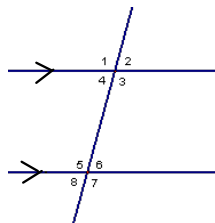
Abbreviated: If  $\parallel$ , alternate interior  $\angle$ s are  $\cong$ .



**Theorem 3.2**-If 2 parallel lines are cut by a transversal, then the same-side (consecutive) interior angles are supplementary.

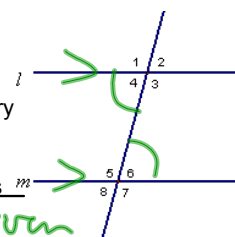
Abbreviated: If  $\parallel$ , s-side (consecutive) interior  $\angle$ s are supplementary.

Let's prove this theorem.



Given:  $l \parallel m$

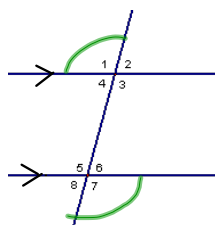
Prove:  $\angle 3$  and  $\angle 6$  are supplementary



Statements	Reasons
① $l \parallel m$	① Given
② $\angle 4 \cong \angle 6$	② If $\parallel$ , alt. int. $\angle$ s $\cong$
③ $\angle 4 + \angle 3$ are suppl.	③ Suppl. thm
④ $m\angle 4 + m\angle 3 = 180$	④ Def of suppl.
⑤ $m\angle 6 + m\angle 3 = 180$	⑤ Subst.
⑥ $\angle 3 + \angle 6$ are suppl	⑥ Def of suppl.

**Theorem 3.3**-If 2 parallel lines are cut by a transversal, then the alternate exterior angles are congruent.

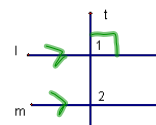
Abbreviated: If  $\parallel$ , alternate exterior  $\angle$ s are  $\cong$ .



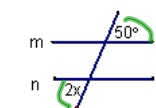
**Theorem 3.4-Perpendicular Transversal Theorem**-In a plane, if a line is  $\perp$  to one of 2  $\parallel$  lines, then it is  $\perp$  to the other line.

Given:  $l \parallel m$ ;  $t \perp l$

Prove:  $m \perp t$

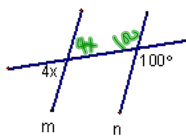


Statements	Reasons
1. $l \parallel m$ ; $t \perp l$	1. Given
2. $\angle 1$ is a right $\angle$	2. Def of $\perp$
3. $m\angle 1 = 90$	3. Def. of right $\angle$
4. $\angle 1 \cong \angle 2$	4. If $\parallel$ , corr $\angle$ s $\cong$
5. $m\angle 2 = 90$	5. Substitution
6. $\angle 2$ is a right $\angle$	6. Def of right $\angle$
7. $m \perp t$	7. Def of $\perp$

Solve for x.  $m \parallel n$ 

$$2x = 50$$

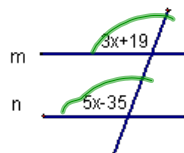
$$x = 25$$



$$4x + 100 = 180$$

$$4x = 80$$

$$x = 20$$

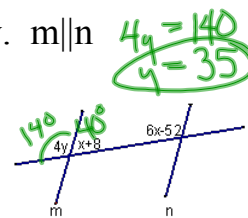
Solve for x and/or y.  $m \parallel n$ 

$$5x - 35 = 3x + 19$$

$$2x - 35 = 19$$

$$2x = 54$$

$$x = 27$$

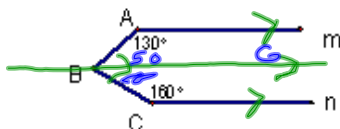


$$4y = 140$$

$$y = 35$$

$$4y + 8 + 6x - 52 = 180$$

$$x = 32$$

Find the measure of  $\angle ABC$ .  $m \parallel n$ 

$$m\angle ABG = 50$$

$$m\angle GBC = 20$$

$$m\angle ABC = 70^\circ$$

Homework:

p. 136-137

#s 14-25, 32-36, 39